

Washington Aqueduct

2005 Annual Water Quality Report

July 2006

What's In Your Drinking Water?

In order to ensure that your tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. Any of these contaminants that have been detected in our monitoring and testing processes are summarized on the water quality table.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791). EPA web site on Drinking Water and Ground Water: <http://www.epa.gov/safewater/>



Safe Reliable Water Is Our Business

Dear Customers,

Washington Aqueduct is pleased to provide you with a summary of our 2005 annual water quality report. Washington Aqueduct was in full compliance with EPA national primary drinking water regulations during the 12-month period covered by this report. Through our on-going capital improvement projects and highly trained staff we are able to meet future regulatory compliance. This report includes details about where your water comes from, its quality and how it compares to stringent standards set by regulatory agencies.

Tom Jacobus
General Manager

Local Metro Water Utilities

District of Columbia
DC Water and Sewer Authority
Department of Water Services
202-612-3434
<http://www.dcwasa.com/>

Arlington County
Department of Public Works
Water, Sewer and Streets
703-228-6578
<http://www.co.arlington.va.us/dpw/>

Falls Church
Department of Environmental Services
703-248-5070
<http://www.ci.falls-church.va.us>



Drinking Water Source Protection

Protection of our source water is important. Proper source water protection will help Washington Aqueduct reduce public health risks, protect our environment and reduce costs associated with finished water treatment. We are partnering with other local water utilities and government agencies to find ways to work with communities and individuals to protect the watershed. In 2005, the Potomac River Basin Drinking Water Source Protection Partnership identified pathogens and emerging contaminants as priority concerns for research. To date, the partnership has selected three sampling sites in the Potomac River for Cryptosporidium source tracking. The sampling sites represent contributions of cattle and wastewater treatment sources. The Centers For Disease Control and the Environmental Protection Agency are doing the analytical work. The monitoring is scheduled to start in October 2006.

Drinking Water Source

Explanation of Terms in the Water Quality Table

MCL (maximum contaminant level) - The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

MCLG (maximum contaminant level goal) - The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

MRDL (maximum residual disinfectant level) - The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG (maximum residual disinfectant level goal) - The level of a drinking water disinfectant below which there is no known or expected risk to health.

TT (treatment technique) - When an MCL cannot be established, EPA may set a treatment technique. A Treatment Technique is a required process intended to reduce the level of a contaminant in drinking water.

ppm - parts per million or milligrams per liter.

ppb - parts per billion or micrograms per liter.

NTU - nephelometric turbidity units.

pCi/L - Picocuries per liter is a measure of radioactivity in water.

AL- Action Level. The concentration of a substance which, if exceeded triggers treatment or other requirements that a water system must follow.

ND- Not detected.

Turbidity- is the cloudiness of water caused by suspended particles. Turbidity can interfere with disinfection and provide a medium for microbial growth.

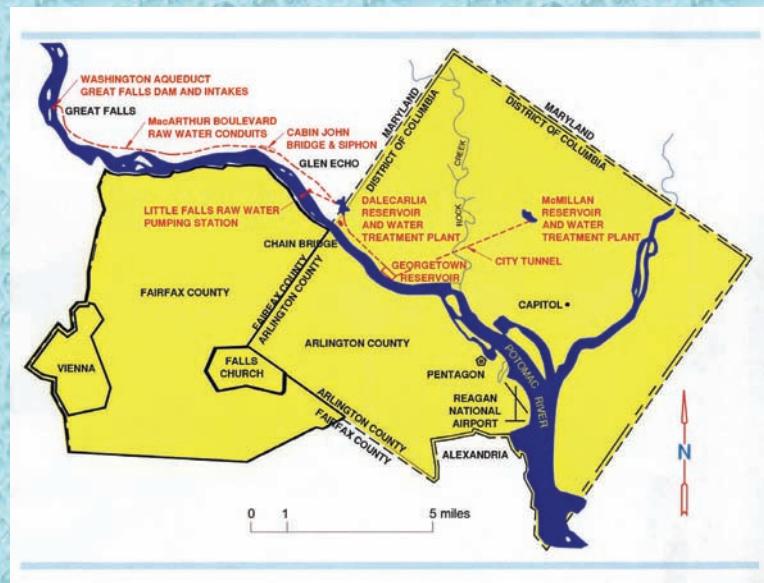
Warning for Risk Population

may be more vulnerable than the general population to certain microbial contaminants such as Cryptosporidium, in drinking water. Infants, some elderly, or immuno-compromised persons such as those undergoing chemotherapy for cancer; those who have undergone organ transplants; those who are undergoing treatment with steroids; and people with HIV/AIDS or other immune system disorders can be particularly at risk from infections. You should seek advice about drinking water from your physician or health care provider. Additional guidelines on appropriate means to lessen the risk of infection by Cryptosporidium are available from the Safe Drinking Water Hotline (1-800-426-4791).

Where Does Your Water Come From?

The Potomac River is the source of water that we filter and treat. Most of the water is drawn at Great Falls and comes to the Dalecarlia Reservoir by gravity in two, 10-mile long conduits. The map shows the Washington Aqueduct service area.

When necessary we pump from our second intake Little Falls. As water travels over the surface of the land or through the ground it dissolves naturally occurring minerals and in some cases radioactive material and can pick up substances resulting from the presence of animals or human activity. Our conventional treatment plants are designed to remove microbial, inorganic, pesticides, organic and radioactive contaminants to levels that are allowable by the state and federal regulations.



Cryptosporidium

All surface water sources are known to be susceptible to contamination by Cryptosporidium. Because of this, our laboratory monitors monthly for Cryptosporidium in the Potomac River, which is the source water for Washington Aqueduct. We have conducted over 10 years of Cryptosporidium monitoring in advance of the most recent Long Term 2 Enhanced Surface Water Treatment Rule (LT2). The purpose of the rule is to provide additional microbial protection such as Cryptosporidium in public water systems that use surface water sources. The rule requires additional treatment when the average Cryptosporidium concentration level in the source water is 0.075 oocysts/Liter. In 2005, Cryptosporidium was detected in the source water only at a level well below this threshold. Although filtration removes these cysts, most commonly used filtration methods cannot guarantee 100 percent removal. Our current test methods cannot determine if the organisms are dead or if they are capable of causing disease. Ingestion of cryptosporidium may cause cryptosporidiosis, an abdominal infection. Symptoms of infection include nausea, diarrhea and abdominal cramps.

2005 Washington Aqueduct Detected Regulated Contaminants

Contaminant	MCL	MCLG	Dalecarlia Water Treatment Plant	McMillan Water Treatment Plant	Major Source in Drinking Water
Unit			Range	Range	
Turbidity NTU	TT	NA	.04 - 0.10	.04 - 0.26	Soil runoff.
Radioactive Contaminants					
Beta/photon emitters pCi/L	50	0	ND - 3.8	ND - ND	Decay of natural and man-made deposits.
Radium 226/228 pCi/L	5	0	ND - 0.76	ND - 0.81	Erosion of natural deposits.
Inorganic Contaminants					
Arsenic ppb	50	NA	ND - 0.6	ND - 0.5	Erosion of natural deposits.
Barium ppm	2	2	0.043 - 0.046	0.032 - 0.048	Erosion of natural deposits.
Chromium ppb	100	100	ND - 0.8	ND - 1.0	Erosion of natural deposits.
Fluoride ppm	4	4	0.53 -.43	0.54 -1.2	Water additive that promotes strong teeth.
Nickel ppb	No MCL	NA	1.0 -1.0	ND - 1.1	Erosion of natural deposits.
Nitrate ppm	10	10	0.62 - 3.17	0.59 - 3.00	Erosion of natural deposits.
Selenium ppb	50	50	ND - 0.8	ND - 0.7	Erosion of natural deposits.
Organic Contaminants					
Chloramines ppm	4 MRDL	4 MRDLG	3.7- 3.8	3.7-3.8	Disinfectant to the treat water.
Atrazine ppb	3	3	ND - 0.53	ND - 0.11	Runoff from herbicide use on row crops.
Dalapon ppb	200	200	ND - ND	ND-1.35	Erosion of natural deposits.
Haloacetic Acids ppb	60	NA	15.2 - 55.7	15.7 - 43.5	By-product of drinking water disinfection.
Simazine ppb	4	4	ND – 0.10	ND - 0.07	Herbicide runoff.
Total Organic Carbon ppm	TT	NA	1.08 -.3.27	2.54 - 4.28	Naturally present in the environment.
Trihalomethanes ppb	80	0	10.4 - 53.9	11.4 - 71.3	By-product of drinking water disinfection.

Improvement in Water Quality

Corrosion Control Research

To assess and evaluate the effectiveness of various treatment options in controlling lead levels in home tap samples Washington Aqueduct developed a series of desktop studies and water chemistry experiments. The Washington Aqueduct conducted a series of experiments that involve circulating water through lead service lines that had been excavated from the District of Columbia distribution system. The experiments include monitoring subtle changes in water chemistry over time and the relative effectiveness of various corrosion control strategies. Additionally, the experiments provide an indication of when adjustments to water chemistry should be made to minimize lead and copper levels and to comply with the Lead and Copper Rule. The initial focus was to confirm an optimum dose of the corrosion inhibitor being used in the distribution system to reduce distribution system lead concentrations. The experiments were designed to mimic actual conditions in lead service lines connected to some customer homes in the District of Columbia. These experiments examine scenarios with varying corrosion inhibitor types (e.g., orthophosphate and zinc orthophosphate), varying corrosion inhibitor doses and optimum disinfection strategies for a system using chloramine for secondary disinfection. To date, results indicate that orthophosphate, at the doses being applied to the distribution system, is the most effective strategy for decreasing lead levels in this system. We are also using the pipe loops to evaluate the effect on lead levels of a temporary spring switch to free chlorine from chloramine.

Residuals project

Washington Aqueduct withdraws water from the Potomac River and makes it safe to drink using a three step process: removing sediment; filtering the water; and disinfecting the water. The sediment removal process involves adding a coagulant and then letting the particles settle in large basins before the water goes to the filters. Over a period of months a large volume of sediment and coagulant (a material we refer to as residuals) collects in the basins and must be removed. Historically, the way that this has been done is to take one of the six sedimentation basins out of service for a short period of time and drain its contents back to the Potomac River. That practice has been permitted under a National Pollutant Discharge Elimination System permit issued under the Clean Water Act by the US Environmental Protection Agency, Region 3. In the most recent renewal period of the permit, EPA directed that these residuals no longer be returned to the Potomac River. Washington Aqueduct performed a feasibility analysis which led to an Environmental Impact Statement that discussed the effects of the various options. In October 2005, an option was chosen that will continually collect the residuals from the basins using dredging and vacuum-type devices and pump those water treatment residuals to a facility that will dewater them and make them available for trucking to an offsite location for disposal. The timeline for construction and operation of this process is contained in a Federal Facilities Compliance Agreement. That agreement allows continuation of the periodic flushing of the residuals to the Potomac River until the required alternative process is in operation by December 30, 2009. There are further restrictions on the timing of interim discharges to limit their effect on the springtime spawning of various fish species. For further information on this project, please visit our website at:

<http://washingtonaqueduct.nab.usace.army.mil/aqueduct.htm>

Perchlorate

In 2004, EPA detected perchlorate in an outfall discharging groundwater from the Dalecarlia area. As a result of this observation, Washington Aqueduct began routinely testing for perchlorate at various locations in the treatment system including the Dalecarlia Reservoir, the sedimentation basins and the finished water. Among the 159 sets of samples collected from the treatment system in 2005, only a few samples indicated detectable levels of perchlorate. One finished water sample, two basin samples and two reservoir samples were reported to have perchlorate concentrations in the range of 1.2 to 1.8 ppb. The other samples collected had consistently lower concentrations of perchlorate. In addition to the routine monitoring of the treatments system water, groundwater monitoring wells in the vicinity of the Dalecarlia Reservoir were installed to assess the influence of ground water on the reservoir. The routine tests for perchlorate in the treatment system have indicated an insignificant influence from ground water on our drinking water, but these wells are expected to provide additional useful information. The occurrence of perchlorate in the source water and finished water appear to reflect the Potomac River watershed. Perchlorate is not regulated under Safe Drinking Water Act regulations, however Washington Aqueduct will continue to test for it and participate in and support others in efforts to study and understand potential sources of perchlorate and the behavior of groundwater in the Dalecarlia area.

